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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/026,044

12/27/2001

Ralph H. Johnson

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01/12/2005

HONEYWELL INTERNATIONAL INC.
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EXAMINER

NGUYEN, DUNG T

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,044

Applicant(s)

JOHNSON, RALPH H.

Examiner

Dung (Michael) T Nguyen

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 19-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-16, 19-22, 24-40 and 42-57 is/are rejected.
- 7) ☒ Claim(s) 12, 23 and 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-16 and 19-57 have been considered but are moot in view of the new ground(s) of rejection.

Double Patenting

Claims 8, 10, 14, 16, and 46 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 6, 9, 15, and 45. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-4, 15-16, 21, 27-28, 33-34, 37, 39, 45-46, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus (US6621842) in view of Nagarajan et al. (US5760939).

With respect to claims 1 and 37, Dapkus discloses a VCSEL comprising at least one indium free quantum well comprising GaAsSb (col.3, 1.5-6). Dapkus lacks the quantum well depth, GaAs barrier layers sandwiching said at least one quantum well; and GaAs confinement layers sandwiching said barrier layers. Nagarajan teach the quantum well depth of 0.2 eV (met the claim limitation of at least 40 meV), GaAs barrier layers sandwiching said at least one quantum well; and GaAs confinement layers sandwiching said barrier layers (col.8, 1.8-22). For the benefit of a VCSEL, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Dapkus what is taught by Nagarajan.

With respect to claims 3-4, 15-16, 21, 27-28, 33-34, 39, and 45-46, Nagarajan disclose the AlGaAs confinement layers (col.9, 1.31-34).

With respect to claim 48, Dapkus discloses a VCSEL comprising at least one quantum well comprising GaAsSb (col.3, 1.5-6). Dapkus lacks the quantum well

depth, GaAs barrier layers sandwiching said at least one quantum well; and AlGaAs confinement layers sandwiching said barrier layers. Nagarajan teach the quantum well depth of 0.2 eV, GaAs barrier layers (col.8, 1.8-22) sandwiching said at least one quantum well; and AlGaAs confinement layers sandwiching said barrier layers (col.9, 1.30-34). For the benefit of a VCSEL, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Dapkus what is taught by Nagarajan.

Claims 2, 5, 20, 24, 29-30, 35-36, 38, 42, 53, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus (US6621842) in view of Nagarajan et al. (US5760939) and further in view of Thornton (US6002705). Dapkus and Nagarajan disclose all limitations of the claims except for the AlGaAs barrier layers. Thornton teaches the AlGaAs barrier layers (col.4, 1.63). For the benefit of a VCSEL, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Dapkus and Nagarajan the AlGaAs barrier layers as taught by Thornton.

Claims 6-8, 13-14, 19, 22, 25-26, 31-32, 43-44, 47, 49, 51-52, 54-55, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus

(US6621842) in view of Nagarajan et al. (US5760939) and further in view of Jewell et al. (US6359920).

With respect to claims 6, 8, 14, 22, 26, 32, 44, 49, 52, and 55, Dapkus and Nagarajan disclose all limitations of the claims except for the GaAsP barrier layer. Jewell teach the GaAsP barrier layer. For the benefit of a VCSEL, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Dapkus and Nagarajan the GaAsP barrier layer as taught by Jewell.

With respect to claims 7, 13, 25, 31, 43, 51, and 57, Jewell disclose the quantum well comprises greater than 1% N (col.8, l.67).

With respect to claims 19, 47, and 54, Jewell disclose the quantum well thickness of 100 Armstrong 9col.17, l.36).

Claims 9-11, 40, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus (US6621842) in view of Nagarajan et al. (US5760939) and further in view of Shimizu et al. (US2002/0034203). Dapkus and Nagarajan

disclose all limitations of the claims except for the GaAsN barrier layers. Shimizu teach the GaAsN barrier layers in Fig.13. For the benefit of a VCSEL, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Dapkus and Nagarajan the GaAsN barrier layers as taught by Shimizu.

Allowable Subject Matter

Claims 12, 23, and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung (Michael) T Nguyen whose telephone number is (571) 272-1949. The examiner can normally be reached on 8:30 - 17:00.

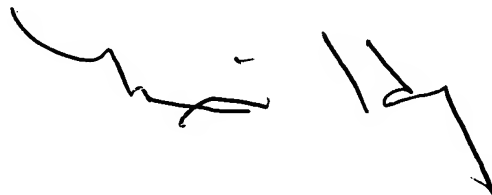
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Harvey can be reached on (571) 272-1835. The fax

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phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3329.

A handwritten signature in black ink, appearing to be 'MINSUN CHAM', written over a horizontal line.

Michael Dung Nguyen

MINSUN CHAM
PRIMARY